

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A burst mode optical receiver comprising:
 - a photodiode, which receives an optical signal and converts the optical signal into a current signal;
 - a pre-amplifier, which converts the current signal into a voltage signal, amplifies the voltage signal with a gain according to a control signal, and outputs an amplified signal, the pre-amplifier comprising an impedance control unit which controls an impedance of the pre-amplifier in response to the control signal and an amplifying unit which converts the current signal into the voltage signal and amplifies the voltage signal with a gain corresponding to said impedance controlled by the impedance control unit ~~such that when a control signal of a first level is generated from a gain controller a transistor of the impedance control unit is turned on to decrease a trans-impedance of the pre-amplifier and when a control signal of a second level is generated from the gain controller the transistor is turned off to increase the trans-impedance of the pre-amplifier;~~
 - a first peak detector, which detects a top peak voltage and a bottom peak voltage of the amplified signal and outputs an average value of the detected top peak voltage and the detected bottom peak voltage as a first reference voltage;
 - the gain controller, which compares the first reference voltage with a comparison voltage and outputs the control signal which controls a gain of the pre-amplifier according to the comparison result, the control signal having a first level when the first reference voltage is lower than the comparison voltage, and the control signal having a second level when the first reference voltage is higher than the comparison voltage;
 - a first limiting amplifier, which receives the amplified signal and the first reference voltage and amplifies a difference between the amplified signal and the first reference voltage; and
 - a buffer, which buffers a limitedly amplified signal from the first limiting amplifier, wherein, when the control signal of the first level is generated from the gain controller, a transistor of the impedance control unit is turned on to decrease a trans-impedance of the pre-amplifier and, when a control signal of the second level is generated from the gain controller, the transistor is turned off to increase the trans-impedance of the pre-amplifier.

2. (Original) The burst mode optical receiver of claim 1 further comprising:
 - a second peak detector, which detects a top peak voltage and a bottom peak voltage of the limitedly amplified signal and outputs an average value of the detected top peak voltage and the detected bottom peak voltage as a second reference voltage; and
 - a second limiting amplifier, which receives the limitedly amplified signal and the second reference voltage, amplifies the difference between the limitedly amplified signal and the second reference voltage, and outputs an amplified signal to the buffer.

3. (Cancelled)

4. (New) The burst mode optical receiver of claim 1, wherein the impedance control circuit comprises serially-connected resistors, one of which is parallelly connected with the transistor.